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BI-MONTHLY PROGRESS REPORT  
for  
AN-ERTS-A PROJECT  
INVESTIGATION OF THE DETECTION & MONITORING OF  
FOREST INSECT INFESTATIONS IN THE SIERRA NEVADA  
MOUNTAINS OF CALIFORNIA

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Progress Report  
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16. Abstract <p>Since the signing of the contract on June 21, 1972 work has proceeded on planned schedule. Hall has met and conferred with the members of his investigative team on numerous occasions. Underflight photographs of 1/18,500 and 1/4,000 have been taken in color and color IR, been partially interpreted in the office and field checked for accuracy.</p> <p>There has been an important change in product orders from RBV to MSS due to malfunction of the RBV. U2 photography has been taken but no photos recorded to date.</p>		
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For the period ending July 31, 1972

AN-ERTS-A PROJECT  
INVESTIGATION OF THE DETECTION & MONITORING OF FOREST INSECT  
INFESTATIONS IN THE SIERRA NEVADA MOUNTAINS OF CALIFORNIA

(GSFC-ID-PR-516MMC #027, Contract #NAS5-21770  
Effective date 6-21-72)

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## Introduction

This report is the first progress report for the investigation of the detection and monitoring of forest insect infestations in the Sierra Nevada Mountains of California, through the use of ERTS-1 imagery.

Since the signing of the contract on June 21, 1972 work has proceeded on the planned schedule with no major exceptions. One minor exception was changing the scale of the underflight photography from 1/20,000 to 1/18,500 due to the limitation of the plane used in the photography. Another exception was changing the date of the underflight photography from early August to late July.

Dr. Ralph C. Hall, Principal Investigator has met and conferred with the members of his team of investigators on numerous occasions and has prepared a work plan for office and field procedures on the project.

### Underflight Photo Coverage

Dr. Robin Welch, Earth Satellite Corporation, has taken 9" x 9" color IR photography of the whole target area at a scale of 1/18,500 and sample coverage of 70 mm. color at a scale of 1/4,000. These photos were taken on June 28, 1972 to coincide with U2 coverage on the same date. Both coverages were moved up a few days to take advantage of ideal weather conditions over the mountains.

### Photo Interpretation

The 1/18,500 and 1/4,000 photos have been partially interpreted by Stephen Wert, Earth Satellite Corporation, to attempt to delineate differing degrees of damage by the lodgepole pine needle miner and the mountain pine bark beetle. In this interpretation he located areas on the photos believed to represent different classes of damage, including defoliation and tree mortality. These photos were then taken to the field for checking on the accuracy

of interpretation. We had hoped to have the U2 photos for comparative purposes but these have not been received to date.

#### Field Check of Photo Interpretation

Hall and Wert, assisted by Dr. Thomas Koerber, a co-operator from the Pacific Southwest Forest & Range Experiment Station, took these photos into the field during the period of August 14 through 16 to check the accuracy of office interpretation. From this it was determined that the photo interpretation was consistently accurate in delineating the different classes of insect infestations.

#### Additional Underflight Photo Coverage

Sample areas of different intensities of insect infestations have now been selected from the 1/18,500 scale photos and these will be covered at a scale of 1/4,000 in both color and color IR. These are scheduled to be flown on August 23 or 24. These photos will then be interpreted and specific sample plots will be selected by Philip Langley, Earth Satellite Corporation, for the purpose of obtaining ground truth information.

#### Collecting Ground Truth Information

A ground truth field crew is in a state of readiness to proceed to collect data as soon as the 1/4,000 photos have been interpreted and sample plot locations selected.

#### Change in Product Orders

In our original product order, ID-PR-516, Proposal No. MMC #027 submitted under the date of December 20, 1971, we requested RBV coverage. Through phone conference with Technical Monitor, Edward Crump, on August 17 it was learned that the RBV system is not functioning and it was agreed that we would substitute MSS, bands 4, 5, and 6. It seems likely that this change in product orders may substantially delay our obtaining ERTS imagery in our target area.

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We have not been able to determine whether our target area was covered by the RBV system during the period when it was functioning.

Respectfully submitted,

Ralph C. Hall  
Principal Investigator

August 18, 1972